

**ENVIRONMENTAL ASSESSMENT  
SOCORRO COUNTY IRRIGATED VALLEY GPA  
EQIP 2002**

**INTRODUCTION**

This environmental assessment (EA) is being prepared by the United States Department of Agriculture Natural Resources Conservation Service (NRCS) to comply with the requirements of the National Environmental Policy Act of 1969 and implementing regulation at 40CFR Parts 1500-1508. The EA will assist NRCS in determining whether the proposed action will have a significant impact on the quality of the human environment and therefore requires preparation of an Environmental Impact Statement. The Socorro County Irrigated Valley (SCIV) Geographic Priority Area was developed in 1997 after a series of public meetings held in Socorro County.

**NEED FOR PROPOSED ACTION**

**Purpose and Need for Action:** There is a need in the Socorro County Irrigated Valley GPA to apply measures which will maximize irrigation efficiencies and reduce the probability of groundwater degradation because of nitrate and or pesticide contamination. The purpose of the GPA is to help insure an adequate supply of high quality water in order to sustain irrigated agriculture and improve the long-term availability of water for other uses including endangered species found in the area.

**Background**

There are approximately 21,240 acres of irrigated land within the SCIV GPA. Approximately 65 % or 13,800 acres is irrigated hayland, 20% or 4250 acres is irrigated pastureland and 15% or 3,190 acres is cropland. Demands on the fluctuating water supply are growing. Irrigation efficiencies have been improving steadily over the last 20 years and probably average between 45% and 50% throughout the entire Socorro County Irrigated Valley at this time. However, the rate in which irrigation efficiencies are improving is not keeping up with the demand for water. The wet cycle, which we have been in since the early 1980's, appears to be over and snowfall has been below average for the last 3 years. The spring runoff has been over earlier and diversions into the MRGCD system has also been diminished accordingly. Threatened and Endangered species issues involving the silvery minnow has created additional demand for the water which has historically been diverted for irrigation for hundreds of years. Serious efforts are being made to keep the river wet from San Acacia to the headwaters of Elephant Butte in order to maintain habitat for the minnow. This past year almost all of the MRGCD storage upstream was exhausted in an effort to create habitat for the silvery minnow. There are other interests pursuing water in the SCIV as well. Urban expansion in Albuquerque and Rio Rancho as well as in Las Cruces and El Paso are also creating high demand for water in NM. All surface irrigation water is controlled and delivered by the Middle Rio Grande Conservancy District (MRGCD). Any water saved with

assistance from EQIP will be distributed according to water delivery needs as determined by MRGCD.

### **ALTERNATIVES:**

Alternative 1: No Action

Alternative 2: Proposed Action: Use NRCS Environmental Quality Incentives Program (EQIP) authorities to assist with the development of a conservation system on irrigated lands in the Socorro County Irrigated Valley GPA. The following practices may be applied singly or in any combination thereof:

1. Land leveling
2. Ditch lining
3. Irrigation pipeline
4. Structures for Water Control
5. Irrigation Field Ditch
6. Irrigation Water Management
7. Forage Harvest Management
8. Conservation Crop Rotation
9. Residue Management (Seasonal)
10. Irrigation System (Surface and Subsurface)
11. Pest Management
12. Nutrient Management
13. Prescribed Grazing

### **SCOPING OF ISSUES FOR UNIQUE AND PROTECTED RESOURCES IN THE AREA**

*Cultural Resources and Historic Properties:* All practices that are considered undertakings under the programmatic agreement between the New Mexico State Historic Preservation Officer (SHPO) and the NRCS will be surveyed for cultural resources. In addition to this onsite survey, a records check will be completed by the NRCS State Cultural Resources Specialist for any cultural resources, which may be present in the SCIV. Any planned practice considered an undertaking will have a section 106 consultation completed before implementation.

*Threatened and Endangered Species:* A search of U.S. Fish and Wildlife Service and New Mexico Department of Game and Fish databases has been made in order to identify any Endangered Species which may exist within the GPA. There are fifteen species shown on the federal Endangered Species List for Socorro County. None of these species will be affected by the proposed actions, as determined by NRCS, which are confined to existing, active croplands. The Silvery minnow in the Rio Grande channel may ultimately be the recipient of water saved, but water allocations are beyond the scope and authority of NRCS. This list has been used as a guide to determine species that may be affected by application of practices applied through this GPA. If any endangered species

are identified that could be impacted by application of practices within this GPA, consultation with the U.S. Fish and Wildlife Service (USFWS) will be initiated before the implementation of the practice.

The New Mexico list showing endangered or threatened species on agricultural: irrigated lands in Socorro County contain four species. Only the New Mexican Jumping Mouse could possibly be affected by concrete ditch lining. It might be found along old earthen irrigation ditches, which contain heavy plant growth within two feet of the water. Surveys for the mouse could be done prior to construction if NMDGF personnel recommend a method detailing how and when. Wetlands, meadows and drain ditches next to water are the primary habitat.

*Wetlands:* Section 404 permits will be obtained for any practice that comes under the jurisdiction of the Clean Water Act (33 USC 1344) and Federal regulations 33 CFR 323.4 and the wetland provisions of the 1985 Food Security Act as amended.

## **IMPACTS AND EFFECTS OF ALTERNATIVES:**

### **Alternative 1 - No Action**

A significant amount of conservation treatment is applied in concert with measures applied under the EQIP program in the SCIV GPA. If this alternative is adopted the amount of conservation treatment applied in this GPA will be substantially reduced. It is impossible to determine to what degree this reduction will be. If no action is taken irrigation efficiencies will remain between 45 and 50% and the probability of groundwater degradation due to fertilizer and/or pesticide application will not be decreased. No action will lead to more controversy and larger water shortages in years to come resulting in environmental and socio-economic impacts in the near future.

### **Alternative 2 - Proposed Action**

- a. Land Leveling - Reshaping the surface of land to be irrigated to planned grades. A design will be provided which indicates where the cut and fill areas are located in the respective field, which is to be leveled. The soil will then be loosened by either disking, ripping or plowing or by a combination there of and then scraped or hauled from the high areas to the low areas. The average earth moved during construction ranges from 100 to 300 cubic yards per acre.
  - Short Term Effects: The land leveling process pulverizes the soil, making it temporarily susceptible to wind erosion until water can be applied. Slopes are designed to a grade, which minimizes runoff. No short-term water quality problems are expected to occur during the installation process. The noise and dust generated by equipment during installation may disturb some individuals in the vicinity. Other temporary effects, which may occur, include a reduction of fertility in the cut areas, dispersal of salts to other areas of the field, and soil compaction if the field is wet or damp when leveled.

- Long Term Effects: Facilitates ability of irrigator to apply irrigation water in a more efficient and uniform manner. Improved crop production. Reduced probability of degrading shallow water table or surface water from nutrient or pesticide intrusion or contamination.
- b. Concrete Ditch Lining and Appurtenances - A fixed lining of impervious material installed in an existing or newly constructed irrigation field ditch, irrigation canal, or lateral. Concrete ditch lining requires the construction of a graded ditch pad, which will be constructed according to the planned slope of the ditch and to the proper height and top width, which will allow the contractor to construct the ditch according to NRCS specifications. The fill material needed to construct the ditch will either be taken from an adjacent field which is being leveled or another borrow area in the vicinity of the planned ditch. If the fill material is obtained off farm, the landowner will obtain the proper permits and permissions necessary to complete the job.
  - Short Term Effects: If the source of the fill material for the ditch comes from a leveling operation, the leveled area may become temporarily susceptible to wind erosion. This could apply to any borrow area used to obtain fill material. No short-term effects on water quality and quantity are expected. Placement of the fill material may create dust because of the dirt moving process itself. Plants and animals are not expected to be impacted by the installation of this practice. The noise and dust generated by equipment during installation may disturb some individuals in the vicinity.
  - Long Term Effects: Facilitates ability of irrigator to apply irrigation water in a more efficient and uniform manner. Improved crop production. Reduced probability of degrading shallow groundwater from nutrient or pesticide intrusion or contamination.
- c. Irrigation Pipelines and Appurtenances - A pipeline and appurtenances installed in an irrigation system. All Pipelines will be plastic (PVC) pipe. Installation of an irrigation pipeline requires that a trench be excavated at a depth deep enough to allow the placement of 30 inches of cover over the top of the pipe. The depth of the trench may vary depending on the planned diameter. It may be necessary to install cement thrust blocks underneath the soil surface if design considerations indicate they are needed.
  - Short Term Effects: Effects may include dust and noise generated by the equipment used during the installation period. It is not expected that any increase in soil erosion rates will occur or that any impairment to water quality or quantity will take place as a result of the installation.
  - Long Term Effects: Facilitates ability of irrigator to apply irrigation water in a more efficient and uniform manner. Improved crop production, Reduced probability of degrading shallow groundwater from nutrient or pesticide intrusion or contamination.
- d. Structures for water control- -A structure in an irrigation, drainage, or other water management systems that conveys water, controls the direction or rate of flow, or maintains a desired water surface elevation. Minor structures for water control

such as ditch turnouts with metal pull gates, ditch checks, drop structures and canal gates may be planned and constructed in existing ditches. Installation of these minor structures will involve a minimal amount of disturbance to the adjacent soil. Most of the work will be in a respective existing ditch or underground irrigation pipeline.

- Short Term Effects: Effects may include dust and noise generated by the equipment used during the installation period. It is not expected that any increase in soil erosion rates will occur or that any impairment to water quality or quantity will take place as a result of the installation.
- Long term effects: Facilitates ability of irrigator to apply irrigation water in a more efficient and uniform manner. Improved crop production. Reduced probability of degrading shallow groundwater from nutrient or pesticide intrusion or contamination.

e. Irrigation Field Ditch – A permanent irrigation ditch constructed to convey water from the source of supply to a field or fields in a farm distribution system. Field ditches will be constructed in earthen material and contain enough fines to prevent excessive seepage losses. An irrigation field ditch requires construction of a graded ditch pad, which will be constructed, to the planned slope of the ditch and to the proper height and top width in order to enable the farmer to construct the ditch. A ditcher designed specifically for construction of dirt ditches will be used to install the ditch. Earthen material needed to construct graded ditch pad for field ditch will be taken from adjacent fields, roads, ditches or other on farm sources which might be available. If the fill material is obtained off farm, the landowner will obtain the proper permits and permissions necessary to complete the job.

- Short Term Effects: If the source of fill material for the ditch comes from a leveling operation, the leveled area may become temporarily susceptible to wind erosion. This could apply to any borrow area used to obtain fill material. No short-term effects on water quality or quantity are expected. Placement of the fill material may create dust because of the dirt moving process itself. Plants and animals are not expected to be impacted by the installation of this practice. The noise and dust generated by equipment during installation may disturb some individuals in the vicinity.
- Long Term Effects: Facilitates ability of irrigator to apply irrigation water in a more efficient and uniform manner. Improved crop production. Reduced probability of degrading shallow groundwater from nutrient or pesticide intrusion or contamination.

f. Irrigation Water Management (IWM) - Determining and controlling the rate amount, and timing of irrigation water in a planned and efficient manner. An irrigation system must be in place in order to apply IWM. Practices described in a, b, c, and d of this alternative facilitate the application of IWM and are based on

the principles of planning IWM as described in section 4 of the field office technical guides.

- Short Term Effects: The application of IWM requires the irrigator to have a basic understanding of some basic principles of IWM. This may require some of his time in order to learn and apply the basic principles when applying irrigation water.
  - Long Term Effects: Improved irrigation efficiency from an average of 45to50%(based on on-site irrigation evaluations completed in SCIV GPA) to 65 to 70% (ref: Irrigation Guide and NRCS National Engineering Handbook Section 15, Chapters 4 and 5. Improved crop production. Reduced probability of degrading shallow groundwater from nutrient or pesticide intrusion or contamination.
- g. Forage Harvest Management - The timely cutting and removal of forages from the field as hay, green chop or silage. This practice does not require the application of any structural or land disturbing practices. Successful implementation of this practice may be dependent upon the application of several other practices including IWM, Pest Management and Nutrient management.
- Short Term Effects: No short-term effects have been identified.
  - Long Term Effects: Soil tilth improved. Increased soil organic matter content. Improved health and vigor of respective crop. Improved crop production. Increased economic returns to producer.
- h. Conservation Crop Rotation - Growing crops in a recurring sequence on the same field. This practice does not require the application of any structural or land disturbing practices. Successful implementation of this practice may be dependent upon the application of several other practices including IWM, Pest Management and Nutrient Management. High residue soil improving crops will be grown in rotation with soil depleting crops in order to maintain or improve soil organic matter content. The number of years of continuous soil improving or depleting crops will depend on the respective soil type.
- Short Term Effects: No short-term effects have been identified.
  - Long Term Benefits: Soil tilth improved, Increased soil organic matter content and soil fertility. Improved health and vigor of respective crop. Improved crop production. Increased economic returns to producer.
- i. Residue Management (Seasonal) - Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed. Residues will be left on the surface until it is time prepare the soil surface for the next years crop. Residues will be incorporated by either plowing or disking or a combination thereof.
- Short Term Effects: Normal tillage may create dust simply because of the tillage operations itself. The noise generated during the tillage operations may disturb some individuals.
  - Long Term Effects: Soil tilth improved. Increased soil organic matter content.

- j. Irrigation System (Surface and Subsurface) - A planned system in which all necessary water control structures have been installed for the efficient distribution of irrigation water by surface means such as furrows, borders, contour levees, or contour ditches, or by subsurface means. All structural practices which will be applied in order to reorganize an irrigation system within the Socorro County Irrigated Valley GPA have been addressed in paragraphs a, b, c, and d.
- Short Term Effects: see short-term effects previously described in paragraphs a, b, c, and d.
  - Long Term Effects: Application of irrigation system will make it possible to improve irrigation efficiencies from an average of 45 to 50% to a desired efficiency of 65 to 70%.
- k. Pest Management - Managing agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop production and environmental resources. The planned integrated pest management program will include appropriate cultural, biological and chemical controls singly or in any combination thereof to control the target pest. All pesticides will be applied with ground rigs. If a chemical pesticide is used the label will be strictly followed. The potential pesticide loss to surface runoff and leaching will be evaluated and provided to the producer during the planning process. The Las Nutrias Water Project, which was a study conducted by New Mexico Institute of Mining and Technology, evaluated pesticide applications on a typical farming operation within the SCIV GPA. There was no evidence of any pesticide contamination to the shallow groundwater table located below the treated fields or the open drains located adjacent to the farm. Pest management will be planned and applied according to NRCS specifications in order to help insure that the water resources located within the SCIV GPA remain free of pesticide contamination.
- Short Term Effects: Some pesticides may emit a offensive when applied. Drift will be minimized because of ground rig applications.
  - Long Term Effects: All pesticide applications will be carried out according to its respective label as required by federal law. Potential for contamination of surface and/or ground water supplies is minimized. Crop production is enhanced when it is determined that pesticide application is needed and it is applied. Economic returns are improved. Beneficial insects may also be controlled.
- l. Nutrient Management - Managing the amount, form, placement and timing of applications of plant materials. Nutrient application recommendations will be based on soil tests or recommendations provided by NMSU. Nutrients will be applied in either liquid or granular form. Granular fertilizers are generally broadcast using a pull type wheel driven broadcast fertilizer spreader or a power take off pull type broadcast sprayer. Both types are calibrated prior to use. Nitrogen is recommended to be applied in 2 to 3 split applications. Liquid fertilizers are usually formulations of nitrogen and are applied to the irrigation water in split applications. Timing is dependent on the stage of growth of the crop. The Las Nutrias Water Project, which was a study conducted by New Mexico Institute of Mining and Technology, evaluated nutrient applications on a typical

farming operation within the SCIV GPA. Temporary spikes in nitrate levels occurred in the shallow groundwater table beneath the fields where nutrients were applied. Nitrate levels remained within the parameters for safe drinking water standards as set by the EPA. Nutrient management will be planned and applied in order to insure that the water resources within the SCIV GPA are maintained at levels which meet EPA safe drinking water standards

- Short Term Effects: Short-term spikes in nitrates may occur immediately following application of a nitrogen fertilizer.
- Long Term Effects: The probability of ground and/or surface water degradation from nutrient applications to agricultural land is minimized. The health and vigor of the respective crop, which is fertilized, will be enhanced resulting in increased crop production. Economic returns are improved.

m. Prescribed Grazing - The controlled harvest of vegetation with grazing or browsing animals managed with the intent to achieve a specified objective. This practice is not dependent on any structural practices, which will be applied under EQIP.

- Short Term Effects: No short-term effects have been identified.
- Long Term Effects: Soil compaction will be reduced. Grazing sacrifice zones will be minimized. Health and vigor of the forage plants will be enhanced. Total forage production will be increased. Extra labor may be required to implement practice. Economic returns will be improved



**TABLE 1****ALTERNATIVE 2 - CUMULATIVE ACTIONS**

<b>Practice</b>	<b>Treatment with NRCS EQIP Assistance Alone</b>	<b>Treatment by Landowner Initiative, SWCD Cost/Share and NRCS Cumulatively</b>
Land Leveling	80 acres	300 acres
Ditch Lining	8,000 linear feet	9,000 linear feet
Irrigation Pipeline	1,000 linear feet	2,000 linear feet
Structures for Water Control	5 ea.	10 ea.
Irrigation Field Ditch	20,000 linear feet	30,000 linear feet
Irrigation Water Management	400 acres	1000 acres
Forage Harvest Management	320 acres	700 acres
Nutrient Management	400 acres	1000 acres
Conservation Crop Rotation	20 acres	40 acres
Residue Management (Seasonal)	20 acres	20 acres
Irrigation System (Surface and Subsurface)	10 number	25 number
Pest Management	400 acres	1000 acres
Nutrient Management	400 acres	1000 acres
Prescribed Grazing	60 acres	240 acres

Alternative	Cost (\$M)	Benefit (\$M)	Net Benefit (\$M)
Alternative 1	10	20	10
Alternative 2	15	25	10
Alternative 3	20	30	10
Alternative 4	25	35	10
Alternative 5	30	40	10
Alternative 6	35	45	10
Alternative 7	40	50	10
Alternative 8	45	55	10
Alternative 9	50	60	10
Alternative 10	55	65	10
Alternative 11	60	70	10
Alternative 12	65	75	10
Alternative 13	70	80	10
Alternative 14	75	85	10
Alternative 15	80	90	10
Alternative 16	85	95	10
Alternative 17	90	100	10
Alternative 18	95	105	10
Alternative 19	100	110	10
Alternative 20	105	115	10
Alternative 21	110	120	10
Alternative 22	115	125	10
Alternative 23	120	130	10
Alternative 24	125	135	10
Alternative 25	130	140	10
Alternative 26	135	145	10
Alternative 27	140	150	10
Alternative 28	145	155	10
Alternative 29	150	160	10
Alternative 30	155	165	10
Alternative 31	160	170	10
Alternative 32	165	175	10
Alternative 33	170	180	10
Alternative 34	175	185	10
Alternative 35	180	190	10
Alternative 36	185	195	10
Alternative 37	190	200	10
Alternative 38	195	205	10
Alternative 39	200	210	10
Alternative 40	205	215	10
Alternative 41	210	220	10
Alternative 42	215	225	10
Alternative 43	220	230	10
Alternative 44	225	235	10
Alternative 45	230	240	10
Alternative 46	235	245	10
Alternative 47	240	250	10
Alternative 48	245	255	10
Alternative 49	250	260	10
Alternative 50	255	265	10
Alternative 51	260	270	10
Alternative 52	265	275	10
Alternative 53	270	280	10
Alternative 54	275	285	10
Alternative 55	280	290	10
Alternative 56	285	295	10
Alternative 57	290	300	10
Alternative 58	295	305	10
Alternative 59	300	310	10
Alternative 60	305	315	10
Alternative 61	310	320	10
Alternative 62	315	325	10
Alternative 63	320	330	10
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Alternative 67	340	350	10
Alternative 68	345	355	10
Alternative 69	350	360	10
Alternative 70	355	365	10
Alternative 71	360	370	10
Alternative 72	365	375	10
Alternative 73	370	380	10
Alternative 74	375	385	10
Alternative 75	380	390	10
Alternative 76	385	395	10
Alternative 77	390	400	10
Alternative 78	395	405	10
Alternative 79	400	410	10
Alternative 80	405	415	10
Alternative 81	410	420	10
Alternative 82	415	425	10
Alternative 83	420	430	10
Alternative 84	425	435	10
Alternative 85	430	440	10
Alternative 86	435	445	10
Alternative 87	440	450	10
Alternative 88	445	455	10
Alternative 89	450	460	10
Alternative 90	455	465	10
Alternative 91	460	470	10
Alternative 92	465	475	10
Alternative 93	470	480	10
Alternative 94	475	485	10
Alternative 95	480		

Alternative	Irrigation Efficiency %	Acre Inches Saved	Installation Costs
1. No Action	45 to 50%	0	0
2. Proposed Action	65 to 70%	8000 ac. in saved	\$180,000

## PERSONS AND AGENCIES CONSULTED

Local work group meeting held on May 8, 2001, Socorro, New Mexico. List of attendees is available in the NRCS Field Office, 103 Neel, Socorro, New Mexico, 87801. Phone: 505/835-1716.

## REFERENCES

Las Nutrias Water Project, NM Institute of Mining and Technology Report. (date)

NRCS FOTG Section IV.

USFWS Endangered Species List, SW Region Ecological Services, County List – Socorro County.

NMDGF Biota Information System of New Mexico (BISON), Species accounts.

**Finding of No Significant Impact  
for the Implementation of EQIP  
in the Socorro County Irrigated Valley GPA**

**Introduction**

The Socorro County Irrigated Valley (SCIV) GPA is a federally assisted action under the Environmental Quality Incentives Program (EQIP), with assistance from the Natural Resources Conservation Service (NRCS). An environmental assessment was conducted in consultation with Local, State and Federal agencies. Data developed during the assessment are available, upon request, from:

U.S. Department of Agriculture  
Natural Resources Conservation Service  
Socorro Field Office  
103 Neel  
Socorro, NM 87801

The Environmental Assessment (EA) is attached for reference.

**DETERMINATION OF SIGNIFICANCE**


Table 1. Determination of Significance of Proposed Action

<b>Context</b>	<b>Intensity</b>	<b>Reasons for Non-Significance</b>
<b>Water Saved</b> - 1% of total Water used by agriculture (800 Ac. Ft.) is saved	Permanent water savings each year	Water savings is realized over 8-month irrigation season. There will be no reduction in flow in MRGCD delivery system. Allocation is beyond control of NRCS.
<b>Ground Water Quality</b> -No detectable change in ground water quality will occur	Probability of ground water degradation due to nutrient or pesticide contamination is minimized over the life of the practices	Ground water quality will neither improve or decline
<b>Surface Water Quality</b> - No detectable change in surface water quality will occur.	Probability of surface water degradation due to nutrient or pesticide contamination is minimized over the life of the practices	Surface water quality will neither improve or decline
<b>Public Health and Safety (Air Quality)</b> - Less than 1% of the agriculture area will be disturbed	Practice construction will temporarily generate dust at scattered locations throughout the SCIV GPA. Implementation will take place throughout the year.	Rural character of the area minimizes air quality problems at any one place at any one time.
<b>Cumulative Impacts</b> - 4 % of the Agricultural area will be affected	Increased irrigation efficiency and the reduced probability of groundwater degradation due to nutrient or pesticide contamination on treated acres will continue for the life of the practices.	Overall irrigation water use in the GPA will essentially remain unchanged.

Other considerations related to context and intensity are discussed as follows: Farms are similar in the SCIV GPA and are not unique compared to other irrigated farms in the state. No issues or concerns have been expressed at any meetings, so controversy is small. Results of actions are known from past experience in the area, thus risk is low. Precedent for future action is dependent upon reauthorization of funding when the time limit on the SCIV GPA expires. There will be no impact to National Register of Historic Places or cultural resources. No potential habitat for T&E species or the species themselves, which may be present in the Rio Grande Valley, will be disturbed as a result of this federal action. No national, state, local or tribal laws will be violated by this action.

#### Finding of No Significant Impact

This finding is based on the evidence presented in the environmental assessment of impacts and alternatives for this geographic priority area. Based on the assessment and the reasons given above, I find that the alternatives analyzed in the EA will have no significant impact on the quality of the human environment. Therefore, an environmental impact statement will not be prepared.



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**ROSENDO TREVINO**  
State Conservationist

*December 6, 2001*

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Date